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Tree Fruit Varieties for Kentucky

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BULLETIN NO. 394

Tree Fruit Varieties for Kentucky

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GENERAL TRENDS IN CHOICE OF VARIETIES

Probably the two most outstanding changes which have occurred in the choice of varieties for commercial planting in recent years have been a general reduction in the number of varieties which are being offered by leading nurserymen and the introduction of more highly colored strains of commonly grown kinds, particularly apples. The nursery catalogs of twenty years ago listed more varieties of nearly all kinds of fruit than are offered today. The trend toward a reduction in the number of varieties grown has been most outstanding in the larger commercial apple sections, particularly in Washington and Oregon. This has simplified considerably some of the problems of harvesting, marketing, culture and spraying, with which growers formerly had to deal.

A large amount of work is being done by experiment stations in breeding fruits for the purpose of developing new varieties. From this has come the introduction of many new kinds that are superior in quality, productiveness, disease resistance, hardiness and other desirable characters. Probably the greatest advance has come in strawberries, brambles and peaches. A number of apple varieties have been introduced in recent years but probably the most noteworthy are the red strains originating from bud sports in orchards of standard varieties. These have been found as a branch sport on a single tree or in some cases as half-tree or whole tree deviations from the standard sort. These varieties may be reproduced by budding or grafting.

* The author is indebted to Mr. Frank T. Street, Manager of Kentucky Cardinal Orchards of Henderson, for reviewing the manuscript and offering many valuable suggestions regarding the response of different varieties.

ADAPTABILITY OF VARIETIES TO SOIL, CLIMATE AND MARKETS

While it is undoubtedly true that the same fruit will respond somewhat differently on different types of soil, yet factors which are really of greater importance are the depth of soil, humus content, moisture-holding capacity, natural fertility and proper drainage. Most fruits possess a rather wide range of adaptability to soil types. In general, the peach and cherry and also the red raspberry and dewberry seem to respond best on sandy loams. Apples, strawberries and grapes seem to prefer the medium type soils, while the plum, pear, quince, black raspberry and blackberry seem to thrive best on soils which contain considerable quantities of clay. Perhaps their rooting habits or the demands which they make for different nutrients are the primary factors which account for these differences in response to varying soil types.

It has frequently been observed that different varieties of fruit often show quite a different response when grown under climatic conditions to which they are not wholly suited. For example, the McIntosh apple, which is a standard winter variety in the north and thru the New England States, becomes a fall variety when grown in Kentucky. The choice of strawberry varieties for different areas has been made, to a great extent at least, on the basis of their response to variations in the length of daily illumination. While these conditions are known to exist, yet there are many fruits which possess wide climatic adaptation. Some outstanding examples of this are the Delicious apple, Elberta peach, Concord grape and Montmorency cherry.

When a grower is making his choice of varieties for either home or commercial planting he should limit his selection to those kinds which are known to succeed in his particular section rather than to choose varieties which are wholly unproved.

For the commercial orchard it is usually desirable that the grower choose a comparatively small number of varieties that are known to respond best under his particular soil and climatic conditions, and to be best suited to the markets with which he will be dealing. Usually larger quantities of a few standard

kinds are more easily handled, both in harvesting and in marketing, than smaller quantities of many varieties. There may, of course, be exceptions to this statement, as in the case of growers who have developed an excellent roadside trade. In such instances it is frequently advantageous to have a larger list of varieties of perhaps several kinds of fruit so that they can supply a succession of fruits to their trade thruout the season.

For the home orchard or for a specific local market, it may be highly desirable to choose kinds that would be unsuited to a large commercial trade. A variety which is grown but little in the state as a whole, might fit excellently into a local fruit enterprise where a home community was acquainted with the particular kind. An example of such a variety is the Hagloe apple which finds favor in a small section of northern Kentucky. For home use then, a grower should plant the varieties that best suit his needs and it is usually best to choose them in such a way and in such quantity that an ample supply will be available thruout the season.

POLLINATION REQUIREMENTS

The pollination problem with fruits has received attention only in comparatively recent years. Undoubtedly, many failures have resulted because adequate provision had not been made at the time of planting for cross pollination between varieties. In certain cases varieties will set and mature satisfactory crops without cross fertilization but numerous experiments have shown that even with some kinds of fruit known to be self fertile, cross pollination adds materially to their ability to yield bountiful crops.

Of primary importance in the choice of varieties to serve as pollinizers for one another is that they blossom at the same time. This is a definite and indispensable requirement because if the varieties do not blossom at the same time they cannot cross pollinate one another. Another thing which should be given consideration is that the information concerning the blossoming dates for the different varieties and for the different fruits should be obtained from your own experiment station and

not from a distant source. It frequently happens that two varieties which might blossom at the same time when grown together in a northern section of the country might respond quite differently in comparative blossoming time when grown together in a section considerably farther south. A more detailed discussion of the pollination problem will follow the variety discussions for each fruit.

PLANTING NEW VARIETIES

Many new varieties of fruits are being introduced each year and undoubtedly a number of these may possess certain characteristics which are more desirable than those of some of the standard kinds now commonly grown. However, in view of the many varieties which are known to be satisfactory, it is a doubtful practice to plant extensively with an untried kind. It is a good practice to have small trial plantings of the recent introductions and quite frequently from these will come one or more varieties that are really outstanding. The public in general and commercial buyers in particular are hesitant about accepting a new variety of fruit until, thru repeated trials, it has definitely proved to be superior to those kinds with which the public is familiar. In consideration of the varieties which are used in trial plantings, several things should be closely watched. The comparative yielding ability, regularity of bearing, blossoming time, ripening time, susceptibility to insect and disease injury, quality and other features should be fully compared. It is in these points of superiority that a new variety may quickly gain recognition and by such performance become a leader.

THE APPLE

Out of more than 7,000 named apple varieties that have been listed in pomological literature there are now about twenty-five that are important for home or commercial plantings and from these, twelve varieties represent nearly 80 percent of the commercial apple crop of the United States. Since the choice of varieties plays such an important part in the success of an

orchard, the apple varieties will be considered under three general headings: 1. Standard varieties. 2. Varieties less commonly grown. 3. New varieties worthy of trial.

STANDARD VARIETIES, SUMMER

Yellow Transparent. This is one of the earliest ripening varieties grown for commercial production and for home consumption. It originated in Russia and was imported to America in 1870 by the United States Department of Agriculture.

The trees grow moderately vigorous and under good cultural conditions come into bearing at an early age. They usually bear regular crops altho frequently they develop the biennial bearing habit. The trees have an upright habit of growth and tend to be rather dense.

The fruit averages medium in size with moderate sized crops but will usually run small where the set is heavy. The fruit is greenish yellow becoming nearly white when fully mature. The flesh is white, fine-grained and moderately firm. Overripe specimens are likely to be somewhat mealy. The flavor is sprightly subacid and the quality is good but not exceptionally high. The skin is rather tender and for this reason the fruits must be handled carefully to avoid bruising. The variety ranks high in culinary quality and because of its wide range of adaptation and exceptional resistance to scab is recommended for home or commercial planting for relatively local markets. Freedom from scab recommends the variety particularly for home plantings where it is sometimes difficult to give a complete spray program.

STANDARD VARIETIES, LATE SUMMER AND EARLY FALL

Wealthy. This variety is similar to Transparent in its ability to grow and bear satisfactorily over a wide range of territory. It is hardy and the quality is good for both dessert and cooking. The variety originated at Excelsior, Minnesota, from seed of the Cherry Crab planted by Peter M. Gideon. These

seed were obtained in 1860 from Albert Emerson of Bangor, Maine.

The tree grows to a medium size and is only moderately vigorous. The form is roundish and somewhat drooping and top growth is usually quite open.

The fruit averages medium to fairly large in size and the trees usually bear early in life and produce annual crops. The prevailing color is red with narrow stripes and splashes of red of greater intensity. The flesh is firm, moderately acid, white and frequently has stains or marking of red thru it. Altho this variety is in season during late summer it will keep well under good storage conditions until early winter.

Wealthy is not widely planted in Kentucky but there are several areas where it appears to do exceptionally well and in these sections it is one of the best varieties of its season for home and local markets.

Polly Eades. The information relative to the origin and general characteristics of this variety was supplied by W. E. Sandefur of Robards, Kentucky, whose father discovered this apple near the Green River, in Henderson County, about 1884. It derived its name from a farm on which it was first found and is considered to be a seedling of the old Yellow Horse variety. The trees are sturdy and vigorous and have an upright, spreading habit of growth. They come into bearing at an early age and bear regular crops of fruit which ripen from mid to late summer. Like Yellow Transparent, it is very resistant to apple scab and possesses the unusual characteristic of having a long blooming period. It has been observed on numerous occasions that if the first series of buds to open were killed by frost, a second series or even a third may follow and consequently this variety almost invariably sets a crop of fruit each year. In addition the fruits can be harvested over a long period of time, or if the grower desires, they can be taken in two commercial pickings because of their good size.

The fruits are medium to large in size and in shape resemble the Maiden Blush. The color is golden yellow with a blush and

with conspicuous white or gray dots over the surface. The flesh is nearly white, firm, moderately fine grained, juicy, mild, subacid and rich in flavor. The quality is excellent for cooking. The fruit keeps exceptionally well in storage even tho its ripening time is in the summer. The many desirable characteristics possessed by this excellent summer apple recommend it highly for home or commercial planting.

STANDARD VARIETIES, LATE FALL AND EARLY WINTER

Grimes Golden. Grimes is a variety which is recognized because of its high quality and its desirability for both dessert and for cooking. It ranks as one of the best yellow varieties which can be grown. This is an old variety which originated in Brooke County, West Virginia. Records indicate that fruit from the original tree was sold to New Orleans traders as long ago as 1804. It seems to thrive best under somewhat southern conditions and for that reason is widely disseminated in the more southern areas of commercial apple production.

The tree is moderately vigorous and usually comes into bearing early. The form is upright spreading and the branches show a tendency to droop. In general the growth is fairly dense. The one trouble which is especially serious with this variety is the disease "collar blight" or "collar rot" which attacks the tree at the base and kills it after several seasons. This difficulty usually shows up not long after the tree reaches bearing age. Considerably better results can be obtained by using "double-worked" trees or by top-grafting Grimes cions to young trees that are known to be hardy at the crown.

The fruit averages medium in size and is somewhat oblong and slightly flattened at the ends. The skin is fairly thin, quite tough and the color is deep yellow with scattering pale yellow or russet dots. The flesh is firm, tender, crisp, creamy yellow, juicy and has a rich, spicy, subacid flavor. As usually handled, this variety is used in early winter, until about Christmas.

The fruits are quite susceptible to spray russetting but comparatively resistant to fungus diseases and insect attacks. The

variety is highly desirable for home or commercial planting if "double worked" trees are used.

Jonathan. This variety is thought to be a seedling of Esopus Spitzenburg and originated on the farm of Philip Rick in Ulster County, New York. It is an old variety and historical accounts state that the original tree was still alive in 1845. In most parts of Kentucky, particularly some of the northern counties, such as Trimble and Boone, it thrives exceptionally well and produces abundant crops. For some reason it responds poorly in regions of the Bluegrass.

The trees are relatively slow growers and seldom attain large size. The growth is rather slender and the trees come into bearing fairly early and usually produce annual crops.

The fruit averages medium in size and has a thin but moderately tough skin that is smooth and usually develops a beautiful red color with indistinct striping. Dark red strains of this variety have been discovered and are sold under such names as "Blackjon" and "Jonared". These are desirable because they develop much better color by harvesting time than the standard variety. In comparison with other varieties, Jonathan, because of its color, very frequently grades out a higher proportion of fancy fruit that sells for relatively high prices.

The flesh is slightly yellow, occasionally tinged with red. The fruits are firm, tender, juicy, aromatic, crisp and sprightly subacid, and the quality is excellent. The one serious trouble which seems to be common in this variety is the disease "Jonathan spot" which can be handled satisfactorily if the fruits are properly sprayed, harvested at the right stage of maturity and stored under proper temperature.

Delicious. This is probably the best known variety on the commercial markets of today. It has a very wide range of adaptation and is grown in most places where apples are successful. The extensive advertising which it has received and the characteristic shape which it possesses, account in large measure for its being so well known. Attention was first called to this variety in 1881, by Jesse Hiatt, of Peru, Iowa. It came as a

sprout from the roots of a yellow Bellflower tree and probably started growth about 1875. Delicious was introduced commercially in 1895.

Trees of this variety grow vigorously and attain excellent size and should be given plenty of space when planted. On rich ground a planting distance of forty feet should be given. The trees bear moderately early in life and usually produce medium-sized crops. Its blossoming time is comparatively early. The natural growth habit of the tree makes it somewhat difficult to prune and train to a satisfactory form. There seems to be a tendency for the branches to form narrow-angled crotches so, if pruning is not properly done, some splitting down of limbs may occur. The trees are very susceptible to apple scab and require an adequate spray program for the control of this disease. Because of this fact, the variety is generally less successful in home plantings where few sprays are applied.

The fruits are above average size and often attain a very large size. The skin is smooth, fairly waxy, possesses a light yellow ground color that is frequently striped and splashed with bright red. In highly colored specimens the color is almost solid red. The fruit is also characterized by having many small, white dots or lenticels on the surface. Red color sports of this variety have been gaining considerable attention in recent years and several strains of these are now offered by different nurserymen. These strains possess the characteristic flavor, size and quality and develop a much deeper and more intense color than the standard variety.

For dessert, the fruit is classed as very good but because of its low acidity, is undesirable for culinary purposes. The flesh is yellowish, fine grained, juicy and very aromatic. The flavor is almost sweet in fully ripened specimens. Poorly colored fruits are usually decidedly lacking in quality and this is one drawback to the variety. The time of harvesting plays a very important part in determining the quality of the apples of this variety and how well they will keep. They should not be allowed to remain on the tree too long.

Golden Delicious. This variety was introduced by the

Stark Brothers Nursery, in 1916. It originated as a chance seedling on the farm of H. Mullens, in Clay County, West Virginia. Because of its excellent quality, good size and attractive golden yellow color it gained recognition quickly and is undoubtedly the leading yellow apple of the present time. It comes into bearing very young and bears regular annual crops and, since the trees do not possess some of the defects which are inherent in the Grimes Golden, it is replacing this variety in many sections. Since the trees are vigorous, healthy, productive and relatively hardy, Golden Delicious has been quite widely planted in the state during the past fifteen or eighteen years. The variety is practically self-fertile and very resistant to diseases. In favorable years the trees set exceptionally heavy crops which should be thinned to avoid breaking limbs.

Fruit size is medium to large and the apples are firm, crisp, juicy, aromatic and mildly subacid. It is an excellent dessert apple and also serves well for culinary uses. In order for it to reach the best condition for storage and keeping it should be allowed to remain on the tree considerably longer than would be right for Red Delicious. If harvested too early it has a tendency to shrivel quite badly in storage. Because of its ability to keep well in storage if properly harvested, this variety should probably be considered as a winter sort. If properly handled it will last well into the winter season. The one serious defect which it possesses is its susceptibility to russetting from spray injury. For this reason care and discretion must be used in the application of materials which may cause this trouble. The exceptionally high quality, heavy yield and regular bearing recommend this variety for home and commercial planting.

King David. Altho this variety has been a profitable one for some growers in Kentucky, it has been planted but little in recent years. The trees come into bearing at a fairly early age but frequently develop the biennial bearing habit after a few years and frequently produce small fruit in the bearing years, when the set is heavy. They grow quite vigorously, attain good size and are hardy. In size, the fruit averages about the same as Jonathan but develops better color. King David originated as a

cross of Jonathan and Winesap and was introduced more than twenty-five years ago.

The flesh has a decidedly yellow color and is firm, tender, juicy, fine grained and possesses a rich, spicy flavor.

The principal difficulty encountered in growing this variety is the development of the malady known as Phoma Spot (King David Spot) to which it is very susceptible, and also to Bitter Rot which is frequently very destructive to the fruit.

STANDARD VARIETIES, WINTER

Winesap. This variety is widely grown in Kentucky and probably has often been overplanted. It has the unfortunate habit of being a rather light bearer; however, this may be because cultural operations and pruning practices were handled in such a way that the trees lacked vigor. Non-vigorous trees fail to reach the size of which they are capable and the fruits which they bear are likely to be small.

Very little seems to be known regarding the origin of this variety. In 1817 Coxe mentioned it as being "the most favored cider fruit in New Jersey" and from this fact it has been considered by many writers as having its origin in that area.

The trees are of medium size and have a roundish, drooping habit of growth. It appears to be quite exacting in culture requirements if good vigor is to be maintained. On older trees the leaves are likely to average rather small and to be thin. Winesap, like all varieties of the Winesap group, is very susceptible to apple scab.

The fruit averages medium to small and has a moderately thick, tough, smooth, glossy skin. In fully matured specimens the ground coloring is yellow and this is covered with a bright, deep red indistinctly striped and blotched with dark purplish red. The prevailing color is a dark, deep red that is very attractive. The flesh is very firm, tinged with yellow and occasionally streaked with red thru the veins. It is fairly crisp, juicy, moderately coarse, sprightly subacid and of good quality. The fruits keep excellently until February or somewhat later under

ordinary storage conditions and until April or May in cold storage. The variety serves well for culinary uses and is favored as a dessert apple for late season.

Stayman (Stayman Winesap). Stayman originated at Leavenworth, Kansas, from a seed planted by Dr. J. Stayman. The first fruits were borne in 1890. The variety is now widely planted and thrives well over a wide range of climatic conditions.

The trees are quite vigorous, spreading and somewhat open. It is somewhat susceptible to winter injury at the crown and in the crotches. It bears fairly in life and usually produces moderate size annual crops. It is very susceptible to apple scab.

The fruit is medium to large and the skin is thick, moderately tough and often nearly covered with rather dull mixed red, somewhat indistinctly striped with dull carmine. There are also dark red color sports of this variety that develop much deeper and better color than the regular Stayman. The flesh is firm, tinged with yellow or green, moderately fine grained, very juicy, pleasantly subacid and very good in quality. It serves well both for dessert and for cooking and keeps well in storage. The greatest fault which is noticeable with this variety is its tendency to develop "growth cracks" in the fruits, under moisture conditions that run unfavorably low and then are followed by conditions of plentiful moisture supply that causes a resumption in flesh growth. As grown in Kentucky, the season for eating the fruit extends from mid-November until February.

Rome (Rome Beauty). Rome has its origin in Lawrence County, Ohio, and was introduced by H. N. Gillett of that county. It was first brought to attention as a new variety before the Ohio Convention of fruit growers in 1848. In Kentucky it holds its place of greatest importance in the eastern part of the state.

The trees grow vigorously, have a spreading habit of growth and possess a rather unusual bearing habit. In addition to producing many fruit buds terminally on spurs they also form a good many terminally on shoots and occasionally laterally on shoots. Because of this, it usually bears annual crops and in those areas where it is best suited, has been found to be a profit-

able variety to grow. It is one of the latest blooming commercial varieties and is seldom injured by late spring frosts. However, it requires some other late blooming kind that will serve as a pollinizer. It is quite susceptible to cedar rust, fire blight and scab and, unless properly handled, the fruits will develop scald in storage.

The fruit is medium to large and has a characteristically long, slender, curved, stem. The skin is thick, tough, smooth and yellow or greenish with a mottling of red. In more highly colored specimens the color becomes almost solid red on the exposed side and frequently shows striping of bright red.

The flesh is almost white, firm, somewhat coarse, fairly juicy, mildly subacid and the quality is average. It serves well for culinary uses and ranks high as a commercial sort for shipping. It stands handling well and is a very good keeper.

A fairly large number of bud sports which develop solid red color have appeared in different sections of the country and are now offered by nurserymen. These are sold under such trade names as Gallia Beauty, Red Rome, etc.

Arkansas (Mammoth Black Twig). This is a late-keeping, winter variety of average quality. It is considered to be a seedling of Winesap and possesses several characteristics which are similar to that variety. It was grown from a seed planted in 1833 near Rhea Mills, Arkansas, and was first propagated by nurserymen about 1868. Another variety which very closely resembles Arkansas is Paragon and the two are frequently confused. They possess many features which are almost identical but are considered by authorities to be distinct varieties. The Paragon is said to have originated in Lincoln County, Tennessee.

Trees of Arkansas grow large and are vigorous, with heavy, crooked, stout branches. In general the variety is a rather shy bearer but seems to respond differently in this respect in different sections. Under favorable seasonal conditions it is not uncommon for the trees to form very heavy crops. It is very susceptible to scab and when the crop is destroyed it frequently fails to bear satisfactorily the following year.

The fruit is medium to large and the skin is moderately

smooth and tough. The ground color is a dull yellowish green overspread with a dull, deep red and obscurely striped with darker red. Often fruits of this variety develop a solid, dark red color.

The flesh is yellowish tinged with green, firm, rather coarse, fairly juicy, moderately crisp, subacid and quite good. The fruit cooks well and is desirable for dessert. Because of its keeping qualities this variety is fairly satisfactory for the home orchard.

York (York Imperial). This is one of the leading commercial varieties thru the Virginias, Pennsylvania, Maryland, and mid-western states. In Kentucky it is grown principally in the eastern part. York received its name from its place of origin which was on the farm of Mr. Johnson, near York, Pennsylvania. The owner's attention was attracted to the tree by the presence of schoolboys who continually searched around it in early spring to find any apples which had remained over winter on the ground, protected by leaves. Mr. Johnson also found some of the fruits and these were in excellent condition. He took specimens to Mr. Jonathan Jessup, a local nurseryman, who started the propagation of this variety about 1830. It was from the noted horticulturist, Charles Downing, that the variety was pronounced an "Imperial" keeper and the name "York Imperial" came into use. Some of the earliest trees were sold under the name "Johnson's Fine Winter".

The trees grow to a large size and are vigorous and bear heavy biennial crops. Growth tends to be rather dense and bushy and the trees require more attention to pruning than some other kinds, if fruit of good size and color is to be produced. It is rather severely attacked by cedar rust and is fairly susceptible to fire blight.

Under satisfactory conditions the fruit attains good size. The skin is thin, tough and smooth and the color is pinkish red with indistinct stripes of carmine overlying a greenish yellow ground color. The fruits have a rather distinct oblique axis which gives them the appearance of being lopsided. The flesh is yellowish, crisp, firm, somewhat coarse, moderately juicy,

subacid and fair to good in quality. It is favored as a canning variety and possesses good culinary qualities. It is not recommended for general planting but will be found satisfactory for home or commercial planting in places where it thrives well.

Ben Davis. This variety, Gano and Black Ben Davis possess so many similar characteristics that they will be discussed together. The latter two differ from Ben Davis principally in their development of a better, very nearly solid red color. The origin of both Ben Davis and Gano is quite obscure. In various writings they have been described as having originated in Tennessee, Kentucky and Virginia. Ben Davis is thought to have originated about 1800.

Ben Davis trees are fairly vigorous growers and form coarse, strong wood which carries the crop well without breaking. The form is upright and spreading.

The fruit averages medium to large and has a tough, smooth, glossy, waxy skin. The apples are mottled, striped and splashed with bright red which gives a prevailing effect of deep red or red striped. The flesh is whitish, occasionally tinged with yellow, quite coarse, firm, only moderately juicy, mildly subacid and rather low in quality.

In spite of its low quality Ben Davis has been a profitable variety for many growers. It bears quite heavily and regularly and the fruits keep exceptionally well. Under good storage conditions they may be kept until June or later. For certain culinary uses, especially baking, this variety serves excellently. Because they develop better color, Black Ben Davis and Gano are preferred by many growers.

APPLE VARIETIES LESS COMMONLY GROWN

During a period of more than twenty years the Experiment Station has maintained a variety test orchard consisting of more than a hundred kinds. Many of these are standard varieties and some are kinds that are not new but were considered to be worthy of trial. Thru the years, some of these varieties have been quite outstanding in their performance and are mentioned

here especially because of their value for home plantings. Some of those mentioned are grown to a limited extent commercially or appear to be especially favored in certain sections.

Gravenstein. This is a very old variety of European origin and ranks as one of the very highest quality apples for culinary uses. The trees grow vigorously and attain good size but are quite tardy in coming into production. The fruits ripen from mid to late summer and are red striped and of good size. The flesh is crisp, juicy, sprightly subacid and the quality excellent. Under average conditions the harvesting season extends over quite a period and when sold the fruits usually bring high prices.

Williams (Williams Favorite). This is a midsummer variety that has shown exceptional yielding ability in tests in the Experiment Station Orchard. The trees grow to good size and have produced heavy regular crops. The fruits are well colored tho not brilliantly, and are red striped. They have a mild subacid flavor and serve better for dessert than for cooking.

Hagloe. This summer variety appears to grow well and finds favor in some of the counties in the northern part of the state, especially Boone. This is an old variety and was first mentioned by the American Pomological Society in 1862. The trees average rather small and form rather flat dense, spreading growth.

The fruits are of medium size, smooth, moderately tender, mottled with pinkish red and marked with narrow stripes of bright carmine. The flesh is white, moderately fine grained, rather juicy, sprightly subacid and serves well for cooking.

McIntosh. This variety is a standard winter sort in northern United States and thru New England. Under Kentucky conditions it ripens in late summer and early fall and does not keep long in storage. Harvesting has to be watched rather closely because the fruits usually start to drop during early August and this may occur before much color has developed. McIntosh is of the highest quality and serves excellently for either dessert or cooking. It belongs to the Fameuse group all of

which have exceptionally high quality. The trees are vigorous, attain good size and have a roundish spreading form.

The skin is thin, smooth, moderately tender and separates readily from the flesh. The prevailing color is bright to dark red with frequently a dark red cheek. A waxy covering over the surface is very prominent and the fruits polish to a brilliant finish. The flesh is white, tender, moderately firm, fine grained, very juicy and possesses a characteristic agreeable aroma. For home use and for local markets no higher quality apple can be grown.

Smokehouse. The variety originated in Pennsylvania. It is a late fall and early winter apple that has performed exceptionally well in the Experiment Station orchard. Neither the color nor the quality of the fruit is exceptionally high but because of its excellent growth, regular production and distinctive flavor, it is recommended as a variety for home use. The trees are roundish, wide spreading and dense.

The fruits are medium to large with a thin, tough skin that is frequently roughened with russet lines and russet dots. The flesh is firm, yellowish, juicy, aromatic and moderately tender. It is excellent for baking and by some is especially favored for sauce because of its unusual and agreeable flavor.

Paducah. This variety originated in Kentucky in the vicinity of Paducah and is considered to be a seedling of Rome Beauty which it resembles in many respects. Its performance in the Experiment Station orchard has been exceptional and it has borne more heavily and consistently than any other variety under test. The trees grow vigorously and more upright than Rome and its blooming time is relatively late tho not quite so late as Rome. Its season of ripening is two to three weeks ahead of its parent.

The fruits are round and somewhat flattened and have a medium thick, moderately tough skin. The ground color is yellowish green and this is overlaid with bright stripings of dark red. In general the color is better than that of standard Rome tho not solid as in several of the red color sports of that variety.

The flesh is white, tinged with yellow or green, firm, crisp,

juicy and pleasantly subacid. The quality is better than Rome and the fruits have a rather distinct aroma. In storage it has a tendency to scald rather badly if not properly handled. It appears to be only moderately susceptible to apple scab.

Golden Sweet. As a late summer sweet apple of good quality this variety ranks among the best. It is an old variety of Connecticut origin and is recommended for home use but not for commercial planting.

The trees grow large and vigorous and bear regularly. The fruit is medium to fairly large and is yellowish green or pale yellow. The flesh is tender, juicy, firm, fine-grained and very sweet.

Geniton. This old variety originated in Virginia and is mentioned here because it is grown in limited quantity over the state and the fruit possesses exceptional keeping qualities. The trees grow to medium size and are moderately vigorous. Older trees have a drooping habit of growth.

The fruits are of medium size with a smooth skin which is usually indistinctly striped with dull carmine. The flesh is moderately fine grained, firm, moderately tender, juicy, and inclined toward a slightly sweet flavor. The apples keep exceptionally well under farm storage conditions although they are inclined to shrivel somewhat if storage temperature is too high.

COMPARATIVELY NEW VARIETIES WORTHY OF TRIAL

U. S. D. A. No. 50. This is the most promising new variety which has been grown in trial on the Experiment Station grounds. So far as is known no varietal name has been given to this apple which originated with the United States Department of Agriculture. A few trees were sent to the Experiment Station for trial and these have now borne three consecutive crops of fruit. The fruit develops somewhat more rapidly than Yellow Transparent and reaches salable size some three or four days in advance of that variety. In addition to developing excellent size in early season it possesses excellent color. The fruits are bright, attractive red on the exposed cheek and show very little striping. The form is somewhat oblong and slightly

conical. The flesh is white, moderately firm, very juicy, sprightly subacid and the quality excellent. It is especially desirable for culinary uses. The trees are moderately vigorous and have an upright, spreading form of growth. So far the variety has shown itself to be fairly resistant to scab and has shown but little blight infection. It is highly desirable for trial in home orchards or for roadside trade or local markets.

Lodi. This variety is of the Yellow Transparent type and is said to be an improved Yellow Transparent. The trees are vigorous and have a peculiar spreading, crooked type of growth. The fruits average fairly large and ripen slightly later than Transparent. In quality they are similar to Transparent and are highly desirable for culinary uses.

Sweet McIntosh. This is one of the most attractive apples in the Experiment Station orchard. The color is dark, deep red on the exposed side, which shades to a lighter red on the rest of the apple. The season is the same as that of McIntosh and the variety appears promising for home use and local or roadside markets. The fruits are decidedly sweet and possess the other desirable qualities of flavor and richness which McIntosh carries.

Sweet Delicious. This variety possesses many of the characteristics of shape and form of its parent but is a sweet apple. The color is red striped and the fruits are flatter than Delicious. It serves as an excellent baking apple and appears worthy of trial for the home orchard.

Orleans. This variety is similar to Delicious in shape and form and in type of tree growth. The fruit color is dark red and the flavor is somewhat more acid than that of Delicious. Its ripening season is about the same as its parent and it appears to be a better keeper.

Turley. This variety is not as recent in origin as the ones previously mentioned and has been planted to a limited extent in Kentucky and northern adjoining states. It was originated by the late Joe E. Burton, pioneer orchardist of Mitchell, Indiana, and is said to be a seedling of Winesap. In appearance it resembles Stayman quite closely altho it develops better color

and averages somewhat larger. In shape and flavor the fruit is very similar to Stayman and it seldom develops growth cracks which is a characteristic trouble with that variety. The color is a dark, attractive red with occasional faint markings of dull carmine. The trees grow vigorously and somewhat spreading. In sections where Stayman is a favorite, this variety promises to be a valuable addition; perhaps, under some conditions, it may replace Stayman because of the desirable features which it possesses.

CRAB APPLES

Transcendent. The history of this variety seems to be unknown but as long ago as 1844 it was mentioned in the nursery catalog of William Prince. The trees grow large and have curved, drooping branches. Fruits average medium to large and have a bright red cheek overspreading a pale yellow ground color. The flesh is firm, yellow, juicy, subacid, moderately fine grained and somewhat astringent. The variety is very good for culinary uses. It ripens from mid to late summer.

Hyslop. This is one of the best known and most widely grown crab apple varieties. It is an old sort but details of its history and origin are obscure. The trees are moderately vigorous, spreading and rather open. It comes into bearing relatively early and usually bears annual crops.

The fruits form in clusters and the blossoming time is fairly late for a crab apple. The fruits are brilliantly colored, dark red or purplish and are covered with a heavy, blue bloom. The flesh is yellow with tinges of red near the skin. It is firm and juicy at first but becomes somewhat mealy as the apple matures. The flavor is subacid and somewhat astringent and the quality very good for culinary purposes. They ripen from late summer to early fall.

STERILITY PROBLEM WITH APPLES

There are a few varieties of apples which are considered to be relatively self fertile, but yields are generally increased if provision is made when the orchard is planted for adequate cross pollination to take place. Even in self-fertile varieties, cross

Average blooming and ripening dates and days to maturity for apples and their susceptibility to diseases.
Average of eight years at Lexington. Arranged in order of days to maturity.

Variety	Average full bloom date	Average ripening date	Days from blooming to maturity	Susceptibility to		
				Scab	Blight	Cedar rust
U. S. D. A. No. 50	Apr. 23	July 2	70	S	M	R
Yellow Transparent	Apr. 24	July 6	73	S	V	R
Lodi	Apr. 23	July 6	74	S	V	R
William's Favorite	Apr. 25	July 27	93	S	S	R
Golden Sweet	Apr. 22	July 28	97	S	V	R
Gravenstein	Apr. 20	Aug. 2	104	S	S	R
Polly Eades	Apr. 25	Aug. 14	111	S	V	R
Wealthy	Apr. 23	Aug. 13	112	S	V	R
Sweet McIntosh	Apr. 24	Aug. 25	123	V	S	R
McIntosh	Apr. 21	Aug. 24	125	V	S	R
Smokehouse	Apr. 25	Sept. 5	133	M	S	R
Paducah	Apr. 27	Sept. 8	134	M	S	M
Grimes Golden	Apr. 23	Sept. 17	147	S	M	R
Jonathan	Apr. 23	Sept. 18	148	M	V	R
King David	Apr. 23	Sept. 20	150	M	M	R
Sweet Delicious	Apr. 23	Sept. 20	150	V	S	R
Delicious	Apr. 23	Sept. 20	151	V	S	R
Orleans	Apr. 23	Sept. 21	151	V	S	R
York Imperial	Apr. 24	Sept. 22	151	M	M	R
Golden Delicious	Apr. 23	Sept. 30	160	M	S	MR
Geniton	May 1	Oct. 10	162	M	S	R
Rome Beauty	Apr. 30	Oct. 12	165	M	M	S
Stayman	Apr. 24	Oct. 7	166	V	M	R
Winesap	Apr. 25	Oct. 10	168	V	S	R
Arkansas	Apr. 24	Oct. 10	169	V	S	S
Turley	Apr. 23	Oct. 9	169	V	M	R
Ben Davis	Apr. 22	Oct. 11	172	M	S	S
Transcendent (Crab)	Apr. 18	Aug. 8	112	S	V	R
Hyslop (Crab)	Apr. 21	Aug. 20	121	S	M	R

Susceptibility: S = Slightly, M = Moderately, V = Very, R = Resistant.

pollination usually is beneficial. Unless provision is made for cross pollination, an adequate set of fruit can hardly be expected on Delicious, Rome Beauty, Grimes Golden, Golden Delicious, Jonathan, Yellow Transparent, Orleans, McIntosh, York, Wealthy, Arkansas and Ben Davis. A satisfactory way to do this is to plant the varieties so that not more than two or three rows of a kind are adjacent. Some growers prefer to set trees here and there over the orchard of a kind that will serve well as pollinizers. The blossoming time of different varieties must be considered because a difference of several days is found between the earliest and latest blooming kinds in the foregoing list. Gravenstein is one of the earliest-blooming sorts, closely followed in order by McIntosh, Delicious, Golden Sweet, Golden Delicious. Stayman and Winesap. Rome Beauty and Geniton are relatively late-blooming varieties. All the varieties in this group are inter-fertile; that is, they pollinate one another satisfactorily unless their blooming time is not the same.

Varieties belonging to the Winesap group, such as Winesap, Stayman, Arkansas, Arkansas Black and, possibly, Turley, are not only self-sterile but also inter-sterile; that is, they do not set fruit when pollinated by pollen from their own flowers or by pollen from flowers of any other of the varieties in this group. If, however, they are interplanted with varieties from the first group they should yield satisfactorily.

THE PEAR

Pears are not grown to any extent commercially in Kentucky altho there are some small plantings that have proved profitable. Pear trees are susceptible to fire blight which is often very destructive to them and frequently serve as a source of infection to apple trees growing near by. Another objection to pears is that some of the varieties have a comparatively early blooming habit and unless planted in favorable locations are likely to be injured by spring frost. Their blooming time is about the same as that of the sweet cherry and many peach varieties. In spite of

these defects, the pear is favored by many for use in home orchards and for this reason some of the better varieties are here suggested.

PEAR VARIETIES

Seckel. This is an American pear, distinct in its characteristics from any of the European varieties. It is one of our very old fruit varieties and was known long before the first meeting of the American Pomological Society in 1848. At this first meeting it was recommended by the Society as a desirable variety to plant for general cultivation.

The trees are vigorous, long lived, very resistant to blight, and have the rather peculiar habit of bearing the fruits in clusters at the tips of the branches.

The only really objectionable characteristic of this variety is the size of the fruits which are small. They are attractive however, because of their clean, trim contour and rich brown coloring. The flesh is very juicy and possesses a rich, spicy, aromatic flavor, much of it in the skin itself which, therefore, should not be discarded when the fruit is eaten. The fruit is excellent for cooking and the variety is recommended at least for the home orchard. The ripening time is early September. The fruit does not keep well.

Vermont Beauty. This variety resembles Seckel in several characteristics but the fruits are large and more highly colored. The variety is thought to have originated as a chance seedling in the nursery of a Vermont fruit grower and nurseryman. The trees are exceptionally vigorous, attain excellent size and are only slightly less productive than Seckel. The fruits are of medium size, handsomely colored, and possess a rich, aromatic flavor and excellent quality. Their ripening time is slightly later than Seckel and their keeping qualities better.

Garber. This variety is considered to be a seedling of the Chinese sand pear and in many respects is similar to Kieffer. It possesses only slightly better quality than Kieffer but because of its ability to stand extremes of both heat and cold and resist blight, is recommended for home planting.

The fruits are large, roundish-oblong and somewhat flattened at the ends. The flesh is white, firm, granular, moderately juicy and the quality is inferior. The ripening time is a week to ten days earlier than Kieffer. It should be planted with this variety to ensure pollination.

Kieffer. This variety is also a seedling of the Chinese sand pear and received its name from its originator, Peter Kieffer. Fruit was borne by the first tree in 1863. The variety is probably more widely planted in North America than any other and its worth has undoubtedly been over estimated more than any other pomological variety. In spite of its low quality it has been generally accepted as a leading commercial sort but its redeeming qualities are quite limited. In southern sections of the country it is more successful than some of the tender-fleshed varieties because it is very resistant to blight and grows well under extremes of both heat and cold. It blooms early however and the blossoms are frequently killed by frost.

The fruit is above average in size, usually dull colored and the skin is thick, tough and commonly rather rough. The flesh is yellowish white, coarse, very granular, moderately juicy, not sweet, and the quality is poor. It has very little use as a fresh dessert fruit and finds its principal value for cooking.

Other Varieties. Le Conte, Douglas, Anjou and Winter Nelis.

THE QUINCE

Very few quinces are grown in Kentucky altho occasional trees are grown for home use. The quince has a peculiar fruit-bearing habit in that the fruits are borne on new shoots which form from the older wood each season. For this reason they usually escape spring frost damage. There are two pests, however, which are especially serious on this fruit and which would very definitely prove a severe hindrance to any extensive planting. These are fire blight and Oriental fruit moth. The fruit is used mainly for preserves and jellies. Some of the best varieties are Orange, Pineapple, Van Deman, Champion and Rea's Mammoth.

THE PEACH

In commercial importance the peach industry is second to that of apples in Kentucky. The principal plantings are in Henderson, McCracken, Graves, Webster, Hopkins, Daviess and Union Counties and the principal variety grown is Elberta. There are several other varieties which meet particular needs or are especially suited to certain markets and in some cases are highly desirable for home plantings. For these reasons they will be described here. As mentioned also for apples, there are several peach varieties, some relatively old and some of rather recent introduction, which appear promising and worthy of trial.

According to the census figures, the period from 1930 to 1935 experienced a reduction of 23 percent in peach trees of all ages in Kentucky, while the trees not yet of bearing age decreased by 47 percent for that same period. Approximately the same reductions occurred over the whole country except that the decrease in trees not of bearing age was greater in Kentucky than for the United States as a whole.

STANDARD PEACH VARIETIES

Mayflower. The origin of this variety is not known, but it is thought to have originated in North Carolina. The trees grow large and are vigorous, hardy and productive. The fruit buds of this variety are considered as among the hardiest of the commonly grown kinds and are late blooming.

The fruit is of medium size, oval and has a dark red blush. The skin is tender and heavily covered with pubescence. The flesh is greenish white, juicy, tender, subacid and clings to the stone. The quality is not high but because of its early ripening time the fruit usually finds quite ready sale. The variety is recommended for home planting or for a limited local market since it does not ship well. Earliness is its principal merit.

Redbird or Early Wheeler. This is the second early ripening variety which has been grown in the tests on the Experiment Station orchards. The trees are hardy and vigorous and develop to excellent size. While the buds are very tender in certain

stages of their development yet they are exceptionally resistant to cold when dormant. We have had this variety develop a satisfactory crop in years when several other varieties were severely damaged.

The fruit develops to good size, being considerably larger than Mayflower, on the average. The color is greenish yellow with a bright red cheek on the exposed side. The flesh is firm, only moderately juicy and clings to the stone. The quality is only fair and the variety is not recommended for planting on a large scale. The fruit is susceptible to brown rot and the blossoms are frequently injured by blight.

Golden Jubilee. This variety, developed by the New Jersey Experiment Station, is of comparatively recent origin and was formed as a second-generation seedling of Elberta and Greensboro. In comparative tests, it ranked as an outstanding variety ripening in midsummer.

The trees grow vigorously and form an exceptionally large number of fruit buds. The wood appears to be quite resistant to winter cold but varying results have been noted with reference to the susceptibility of the fruit buds to winter injury. From Henderson County, Mr. Frank Street has reported that this variety has been found more hardy than Elberta. In the Experiment Station orchard the buds have suffered fully as much damage as Elberta, if not slightly more. Other reports indicate that under average conditions the wood is probably slightly less hardy than Elberta while the fruit buds are about equal to those of Elberta in their ability to withstand winter cold. Its blossoming time is comparatively early but slightly later than Elberta. The matter of only a couple of days in blooming time might be an important factor in determining the amount of injury resulting from late spring frosts.

The fruit averages medium to large and is very attractive. The color is golden yellow with a distinct blush, and the fruits are moderately firm. The flesh is tender, very juicy, only slightly subacid and the quality is excellent. This variety ranks as one of the best quality yellow-fleshed, freestone peaches which

ripen in late July. The variety is recommended for the home orchard or commercial plantings.

Rochester. Rochester developed from a seed planted by Mr. Wallen near Rochester, New York, about 1900. It was introduced in 1912. The trees grow large and vigorously and their form is upright-spreading. In general, this variety is more hardy in bud than the average yellow-fleshed peaches.

The fruit is of medium size with a thick, tough skin that is heavily pubescent. The color is lemon yellow which changes to a deeper yellow at complete ripeness and is blushed and mottled with dark red. The flesh is yellow with red streaks near the stone, tender, very juicy, sweet and highly flavored. The stone is free.

This variety possesses the characteristic of ripening over a rather long period. While this might be highly desirable in a variety grown for home use, it is generally undesirable in a commercial sort.

Carman. This variety has a very wide adaptation and is able to withstand climatic conditions of both north and south and grows very well over a wide range of soils. Carman grew from a seed planted in 1889 by J. S. Stubenrauch, of Mexia, Texas. The tree fruited in 1892 and because of its attractive appearance and freedom from rot, Mr. Stubenrauch first named it "Pride of Texas". The name was later changed to Carman in honor of E. S. Carman who, for many years, was editor of the Rural New Yorker. The trees grow large, vigorous and spreading and are hardy and prolific.

The fruit is of medium size and roundish-oval. The skin is thin, moderately tough and the color is creamy-white tinged with pink, some specimens splashed with darker red. The flesh is white, moderately fine grained, firm, red at the pit, moderately juicy, fairly sweet and pleasantly flavored. The stone is nearly free.

Because of its good quality, hardiness and regularity of bearing, this variety is one of the very satisfactory ones of its season for the home orchard or for commercial plantings. Since the introduction in recent years of many new yellow-fleshed

varieties of high quality, Carman has been less commonly planted as a commercial variety. Because of this fact, it is suggested that its use be limited to the home orchard where its hardiness is a feature worthy of consideration.

Hiley. This variety originated with Eugene Hiley of Marshallville, Georgia, about 1886. It was thought to be a seedling of Belle crossed with Alexander. It was recognized by the American Pomological Society and placed on its list of recommended varieties in 1909. The trees are of medium size, upright-spreading and moderately vigorous and productive.

The fruit is medium in size and the color of the skin is greenish-yellow with a dull blush extending over part of the surface. The skin is thin, quite tender, and the fruits bruise easily and are quite susceptible to brown rot. The flesh is creamy white, stained red at the pit, moderately firm, somewhat stringy, juicy, moderately sweet and pleasantly flavored. The stone is free. For a white-fleshed, freestone variety ripening at its season, Hiley is very good and is especially recommended for the home orchard. It is also excellent as a commercial variety as is shown by its wide distribution thru southern sections.

South Haven. This variety was found in 1911 on the farm of A. G. Spencer about seven miles north of South Haven, Michigan. The orchard was planted to the St. John Variety and it was noticed that one tree in the block was somewhat different from the rest, and a more reliable producer. It continued to have an excellent production record following the severe winters of 1912 and 1917-18. The tree was observed thru these years by Roy Gibson of the Monroe Nursery Company, of Monroe, Michigan, and trees were released by them in 1918 under the name South Haven. The trees are vigorous and have a somewhat spreading habit of growth. The fruit buds are unusually hardy and in the summer of 1938 trees of this variety bore excellent crops at Lexington following two severe frosts in early April, that killed 90 to 95 percent of the Elberta buds. The wood appears somewhat less hardy than Elberta and shows less recuperative power following injury than this variety.

The fruits are of good size, with a dull-yellowish ground

color and rather obscurely blushed with dull red. The pubescence is quite heavy which gives the fruits a somewhat dull color. The flesh is firm, juicy, yellow and of good quality and the stone is free.

For home or commercial planting the variety appears highly desirable because it possesses good quality and the buds have the ability to withstand temperature conditions that are frequently disastrous to some other kinds.

Belle (Belle of Georgia). This variety originated from a seed of Chinese Cling planted in 1870 by L. A. Rumph, of Marshallville, Georgia. Oldmixon Free is thought to be the other parent. It was first recommended by the American Pomological Society in 1899.

Trees of this variety grow large and vigorously, are spreading and open and produce exceptionally well. The fruit buds are hardier than many other commonly grown varieties and in the Experiment Station orchard the trees have borne fair to good crops in years when Elberta buds have been killed.

The fruits are very attractive, because of their large, round form and creamy-white ground color with a beautiful crimson cheek. The flesh is white, tinged with red at the pit, juicy, somewhat stringy, tender, mildly flavored and of good quality. The stone is free.

This is one of the best varieties of its season and is especially recommended for the home orchard or for commercial plantings which cater largely to a local market. It should not be marketed in localities where it would come in competition with Elberta grown in more southern sections.

Golden Sweet Cling. This variety originated near Fort Smith, Arkansas. The trees are large and vigorous but the fruit buds are quite susceptible to winter injury. The fruits are round and average large. The color is exceptionally attractive, being a deep, rich yellow, overlaid with dark, deep red. The flesh is firm, very juicy, sweet, and pleasantly flavored. The variety is a clingstone and stands shipment very well. Because of its attractive yellow flesh and solid texture this variety is especially

good for canning or pickling. It will produce satisfactorily in areas not subject to severe winter cold or late spring frosts.

Elberta. The origin of this variety in 1870 marks an epoch in the peach industry of this country. It can truthfully be said that no other fruit which is as tender as the peach, has as wide a distribution as the Elberta variety. It is grown in practically every section where peaches thrive and produces exceptionally well under a great variety of soil and climatic conditions. Elberta developed from a seed planted by Samuel H. Rumph of Marshallville, Georgia. The seed from which it grew came from the Chinese Cling variety, but the other parent is not definitely known. It was thought by Mr. Rumph that the Chinese Cling flower which produced this seed was fertilized by pollen from the Early Crawford variety. The variety received its name from Mr. Rumph's wife, Clara Elberta Rumph.

The trees are upright-spreading, rather dense, vigorous, fairly tender in bud and quite hardy in wood. The variety possesses the unfortunate characteristic of being one of the earliest to bloom and because of this, the fruits are frequently killed after the blossoms have opened.

The fruit is roundish oblong, and of good size. The skin is rather thick, quite tough and covered with a rather thick pubescence. The color is deep yellow widely overspread with red and heavily mottled over most of the surface. The flesh is yellow, stained with red near the pit, juicy, somewhat stringy, firm but tender, mildly subacid and the quality is good. It is a freestone peach.

The quality of Elberta is sometimes discriminated against because the fruits were harvested prematurely. For distant shipment they must, of course, be handled in this way, but for home use the quality will be markedly improved if the fruits are allowed to remain on the tree until nearly soft ripe.

Within recent years several strains of Elberta have been introduced by nurserymen. Some of these ripen earlier and some later than the standard variety and very recently a more

highly colored strain of this variety was introduced. In their characteristics, other than that of ripening time or color intensity, these other varieties appear nearly identical with standard Elberta.

J. H. Hale. This variety was found as a chance seedling by J. H. Hale of South Glastonbury, Connecticut. It appears probable that Elberta is one of the parents. Distribution of trees of J. H. Hale began in 1912 and in the intervening years it has been planted in all the important peach-producing sections of this country. The trees are moderately vigorous, upright spreading, open topped and productive. In most sections, however, it is self sterile and must be planted with other varieties to ensure adequate fruit setting. The introduction of bees in the orchard at blossoming time also aids greatly in effecting a proper set of fruit. The fruit buds of Hale are relatively tender, even to a greater extent than Elberta, and extremely favorable sites should be chosen for this variety. In frosty years it forms many "buttons" and generally yields less than Elberta.

The fruit of Hale is one of the largest and most attractive of our commonly grown varieties. The trees are not so large nor so productive as Elberta, but the individual fruits average considerably larger. The ripening time is approximately the same as for Elberta. The fruits are nearly round and have a deep golden color with an attractive red blush. The pubescence is light and the skin thick and rather tough. The flesh is deep, yellow, stained red near the pit, and moderately firm, juicy, fine grained and fairly sweet, yet sprightly. The quality is very good, and the variety is freestone. A self fertile strain of this variety has been discovered and trees of this kind can now be obtained.

PEACH VARIETIES WORTHY OF TRIAL

Vidette. This variety is a seedling of Elberta, developed by the Vineland Station in Ontario, Canada. It ripens approximately three weeks ahead of Elberta and in comparative trials

in the Experiment Station orchard has proved to be considerably hardier than its parent. The trees are moderately vigorous and very productive.

The fruit is of excellent size, roundish oval, deep, rich yellow blushed with red, yellow fleshed, somewhat stringy, mildly subacid and freestone. The fruit as grown at Lexington has been superior in size, quality and color to that of Elberta.

Viceroy. This variety is also of Canadian origin and is a seedling of Elberta. In the season of 1938 the fruit buds suffered very little injury during two frosty nights in April, at which time Elberta buds were severely damaged. Its blossoming time is comparatively late.

The fruits are of good size, yellow fleshed, freestone and of high quality.

Valiant. This variety is another Elberta seedling from the Vineland Station, which appears very promising. The trees are vigorous, very productive and more hardy than Elberta.

The fruits are large, roundish oblate, yellow blushed with red, firm, juicy, freestone, and possess a rich flavor. They ripen two to three weeks ahead of Elberta and are desirable for the home orchard or for limited trial plantings for commercial sale.

Veteran. This is about the latest ripening variety of the Elberta seedling originating from the Vineland Station. Its ripening time has followed just shortly after that of Valiant in our test trees. Like the other three it has shown a degree of hardiness markedly superior to Elberta. This variety originated in 1919 as a cross between Vaughn and Early Elberta. The trees are vigorous and very productive and carry the crop exceptionally well.

The fruits are large, round and attractively blushed. The flesh is yellow, freestone, moderately firm, juicy, and high in quality. The quality, attractiveness and hardiness are points of outstanding importance which recommend this variety for home orchards or limited commercial plantings.

Halehaven. This variety was developed by Stanley Johnston at the Western Michigan Experiment Station at South Haven, as a cross between the varieties South Haven and J. H. Hale. In tests at the Kentucky Station it has been outstanding in productivity and relative hardiness. It produced an abundant crop in 1938 when Elberta was practically a failure. It ripens approximately two weeks earlier than South Haven and the trees grow vigorously.

The fruits are large, attractively colored and the flesh is yellow, firm, freestone and of high quality.

Mamie Ross. This is an old variety that appears to grow best in southern sections of the country. The variety originated about 1881 at Dallas, Texas, and is considered to be a seedling of Chinese Cling. Its outstanding performance over a period of several years in the Experiment Station orchard at Lexington warrants its recommendation at least for home planting. While the trees bloom early, yet they have borne about as consistently as any of the varieties under trial. They are vigorous, have an upright-spreading habit of growth and form a large number of fruit buds.

The fruit is of medium size, beautifully blushed, and moderately soft. The skin is thin, somewhat tough and separates easily from the pulp. The flesh is white, streaked with red near the pit, somewhat stringy, very juicy, pleasantly flavored and good in quality. The stone is semi-cling.

Othelle (July Heath). This variety originated about 1923 as a seedling on the farm of J. W. Harris near Paducah, Kentucky. It was introduced by the Clinton Nurseries of Clinton, Kentucky, and was named in honor of the daughter whose father owns this nursery. It has been outstanding as a high-quality, white-fleshed clingstone variety. It has proved to be exceptionally hardy and has borne good crops in years when other varieties were killed by cold. The variety is recommended for home or commercial planting.

Average blooming and ripening dates, days to maturity, and flesh color for peach varieties. Average of five years' results at Lexington. Arranged in order of days to maturity.

Variety	Average full bloom date	Average ripening date	Days from blooming to maturity	Color of flesh	Free or cling-stone
Mayflower	Apr. 8	July 1	84	White	Cling
Redbird	Apr. 5	July 17	103	White	Cling
Golden Jubilee	Apr. 1	July 28	117	Yellow	Free
Viceroy	Apr. 7	Aug. 3	118	Yellow	Free
Rochester	Apr. 6	Aug. 3	119	Yellow	Free
Vidette	Apr. 3	Aug. 1	120	Yellow	Free
Halehaven	Apr. 3	Aug. 2	121	Yellow	Free
Mamie Ross	Apr. 1	Aug. 3	124	White	Semi-cling
Valiant	Apr. 5	Aug. 7	124	Yellow	Free
Carman	Apr. 4	Aug. 8	126	White	Nearly free
Veteran	Apr. 6	Aug. 10	126	Yellow	Free
Othelle	Apr. 5	Aug. 10	127	White	Cling
Hiley	Apr. 1	Aug. 11	132	White	Free
South Haven	Apr. 4	Aug. 15	133	Yellow	Free
Belle of Georgia	Apr. 7	Aug. 21	136	White	Free
Golden Sweet Cling	Apr. 4	Aug. 28	146	Yellow	Cling
J. H. Hale	Apr. 4	Aug. 30	148	Yellow	Free
Elberta	Mar. 30	Aug. 27	150	Yellow	Free

Varieties ripening later than Elberta and J. H. Hale are not recommended for Kentucky because of the serious damage that is caused by the Oriental Fruit Moth.

STERILITY PROBLEM WITH PEACHES

With very few exceptions, peach varieties are self-fertile. Among the standard kinds the J. H. Hale is definitely known to be self-sterile; consequently, must be planted close to other kinds to ensure cross pollination. Any of the commonly grown commercial varieties should serve satisfactorily as a source of pollen. Altho most peach varieties are self-fertile, it is generally agreed that fruit setting is improved by planting several varieties in strips of two to four rows each.

THE NECTARINE

The nectarine is a very close relative of the peach and is considered to be a bud sport of that fruit. The trees are almost identical with the peach and peach trees or certain limbs on them may develop nectarines and nectarine trees will sometimes produce peaches. The trees, however, may be reproduced by budding.

The principal difference between the peach and nectarine fruit is that the nectarine is smooth skinned and fuzzless. In general, too, they are smaller than peaches but have very much the same flavor and the pit or seed is almost identical in appearance with that of the peach. There are both cling and freestone varieties of nectarines and the flesh color may be red, yellow or white.

With respect to climatic adaption, soil requirements, blooming habits and season of ripening they resemble the peach and may be expected to grow satisfactorily where peaches thrive. They are neither widely nor extensively grown, however, and most of the nectarines in this country are produced in California.

The principal difficulty encountered in growing the nectarine is that it is particularly susceptible to injury by fungus diseases, such as brown rot and scab and also to the attacks of curculio and, in some sections, the green June beetle.

NECTARINE VARIETIES

Lord Napier. This is one of the principal varieties grown in California and it also succeeds well in Eastern United States. It is one of the earliest ripening fruits of this kind. The trees grow fairly large and bear profusely. The fruits average good size and frequently develop a dark crimson cheek on the exposed side. The flesh is white, tender, very juicy and of good quality and the variety is freestone.

Newton. This variety is considered one of the best for the Eastern United States. The trees are hardy, have an upright spreading habit of growth and bear heavily. The fruits are

large, beautifully colored and of excellent quality. The flesh is pale green and the stone is free.

Other varieties that have been grown to a limited extent and appear to be satisfactory are, Elruge, Rivers Orange, Persian, and Sure Crop.

THE APRICOT

This fruit is not recommended for planting under Kentucky conditions because of its exceptionally early blooming habit. It is the first fruit to bloom in the spring and only in exceptional years do they escape damage from spring frosts. They can be expected to bear with any regularity only in the most favored locations. The leading varieties are, Moorpark, Alexander, Early Golden, Wilson, Delicious, Stella, Geneva and Superb.

THE CHERRY

The commonly cultivated cherries belong to two species, *Prunus cerasus*, the sour cherry, and *Prunus avium*, the sweet cherry. A third group known as the Duke cherries are hybrids between the sours and sweets.

Considerable differences are found in the climatic response, soil requirements and general adaptability of these groups, particularly between the sweet and sour varieties. Only a few parts of the United States are particularly suited to growing sweet cherries. The two most outstanding areas are the Pacific Coast and the Great Lakes districts. Sweet cherries are quite demanding in their soil requirements and also the climatic conditions under which they grow. In southern sections of the country they bloom a week to ten days earlier than sours and for this reason are frequently damaged by frost after the blossoms have opened. In the dormant condition the fruit buds are as subject to injury as those of the peach and wood injury frequently occurs in winter. During the exceptionally cold winter of 1935-36 young sweet-cherry trees in the Experiment Station orchard were killed completely while peach trees of the same age were much less seriously damaged and have now made a

satisfactory recovery. It appears to be characteristic of the sweet cherry that its ability to recover after wood injury has occurred is less than that of the peach. Consequently, greater mortality of sweet cherries than of peaches is likely to result following a winter of critical temperatures.

The sour cherry is one of the most satisfactory fruits to grow because of its ability to thrive under a wide range of climatic conditions and also because of its comparative freedom from diseases and insects. It will probably respond better under a lack of proper care than most any other fruit and yet will show equally ready response to careful attention and handling. It blossoms relatively late and is much less likely to be injured by late spring frosts than the sweet cherry or the peach. In the dormant condition the buds are nearly as hardy as most apples and only in very exceptionally cold winters is wood injury likely to occur.

The number of sour cherries grown in Kentucky is comparatively small but the response which this fruit will make under conditions here is so satisfactory that limited plantings for both home and commercial purposes appears warranted. The trees come into production at an early age and, with proper care as to spraying and culture, will bear satisfactorily over a period of many years.

The Duke cherries possess characteristics of both the sweet and sour varieties. The growth habit is intermediate between the two and the fruit resembles the sour in appearance and flavor. The blooming habit is somewhat different in different varieties but, as a rule, is about as early as for the sweets. Altho the fruit is very desirable, they have proved rather uncertain in our tests at the Experiment Station orchard and varieties of this species are recommended only where the trees can be located in especially favored areas.

VARIETIES OF SOUR CHERRIES

Dyehouse. This variety is considered to have originated in Lincoln County, Kentucky, more than seventy years ago, from a pit planted by a Mr. Dyehouse. It resembles Early Richmond

in many respects and is generally considered to be a worthy rival of that variety. The points in which it differs from Early Richmond are, that it ripens approximately a week earlier, is somewhat less productive and more capricious as to its environment. The trees are rather small but fairly vigorous, with drooping branches and a round, dense top, and produce well.

The fruit is somewhat smaller than Early Richmond but has a brighter, clearer color and is more attractive. The skin is thin, tough and adheres to the pulp. The flesh is light yellowish-white, with pinkish juice, tender, tart, and of very good quality.

Early Richmond. This is the leading early-season sour cherry that is grown for both home and market. Its position as a leading early cherry has been attained largely because of the cosmopolitan habit of the trees. They thrive in practically all sections of the United States and are vigorous, healthy and fruitful in all areas. This is one of the oldest sour cherries which we have and was introduced from England where the variety is still known as Kentish. It was brought to America early in the nineteenth century by William Prince and was named Early Richmond because Mr. Prince obtained his first trees from Richmond, Virginia. The trees are of medium size, vigorous, upright-spreading and productive.

The fruit matures early and is light red, changing to darker red at full maturity. The skin is thin and rather tough and separates from the flesh. The flesh is pale yellow with light-pinkish juice, tender, pleasant flavored and good in quality.

Montmorency. This is the leading sour cherry of America. It leads as a fruit which is used fresh and is the principal canning cherry of the country. It surpasses all others in quality, productiveness and vigor. The variety probably originated in France but the date of its introduction to America is not known. The trees are vigorous and very productive and attain excellent size. The fruit matures in early June, is of good size and has an attractive red color. The skin is thin, tender, melting and sprightly acid and the quality excellent.

English Morello. This is the standard late sour cherry

but does not thrive under as wide a range of conditions as either Montmorency or Early Richmond. The variety probably originated in either Germany or Holland. It is not so healthy as the other leading sour cherries and is very susceptible to leaf spot. The trees are small, fairly vigorous while young, come into bearing at an early age and produce heavy crops.

The fruit is dark red, very acid and stands handling well. Due to the exceptionally acid flavor it is not suitable as a fresh dessert fruit but for culinary purposes is unsurpassed and when cooked produces a rich, dark wine-colored fruit that has a pleasant, sprightly aromatic flavor. The trees may be set considerably closer than either Montmorency or Early Richmond because they never attain large size.

VARIETIES OF SWEET CHERRIES

Gold. This is a comparatively new variety, noteworthy because of its hardiness, productiveness and relatively late blooming. It was discovered on the farm of S. J. Thomas of Richardson County, Nebraska. The trees are vigorous and the fruit ripens in early summer. The color is a rich golden yellow and the fruits are large. In addition to the merits already mentioned, the early-bearing habit commends this variety for home and commercial planting.

Wood (Governor Wood). The original tree of this variety was produced as a seedling in 1842 by Professor J. P. Kirtland of Cleveland, Ohio. The variety seems more particularly suited to the home orchard than to commercial planting. It is not a heavy producer and is relatively tender to cold weather and quite demanding in regard to its soil requirements. The tree however is vigorous and starts bearing at an early age. The fruit is rather soft and does not stand handling so well as some other varieties; it has, however, a very attractive appearance, and ripens early in the season. The flesh is juicy, tender, sweet and deliciously flavored.

Tartarian (Black Tartarian). This variety is of Russian origin and first gained recognition in this country about 1848. It is now probably the best known and most widely grown sweet

cherry of eastern United States. It thrives under a wide range of soil and climatic conditions and is a general favorite because of its hardiness and fruitfulness.

The fruits are relatively small and ripen about the first week in June. The color is glossy black, the flesh purplish red and it has a rich flavor. Among the sweet cherry varieties this one ranks high in culinary quality and therefore is especially recommended for home use. Its relatively soft flesh makes it less desirable as a commercial variety.

Napoleon (Royal Ann). This is a very old variety of unknown origin. It was introduced into America in the early part of the nineteenth century and is now widely grown. On the Pacific coast it is commonly known as Royal Ann. Trees of this variety are exceptionally vigorous, attain excellent size and are very productive. The fruit is firm-fleshed, of good size, handsome in appearance and the quality is excellent. The color is bright red over a yellowish ground color and the ripening time is about the second week of June.

Windsor. This is a variety of American origin; it was found on the farm of James Dougall of Windsor, Canada, during the latter part of the nineteenth century. Trees of this variety are quite tardy in coming into production but grow vigorously and reach good size and are relatively hardy. The fruits are very dark red, firm fleshed, medium size and of fine quality. It ripens after the middle of June and is probably the most widely grown late-maturing sweet cherry.

Yellow Spanish. This is one of the oldest varieties of the Bigarreau type and has been widely grown in this country. Its exact origin is not known and altho the name would imply Spanish origin yet the name, Bigarreau, is of French derivation. Accounts of the variety were given during the time of Pliny. Trees of this variety attain a greater size than those of any other sweet cherry and have a rather distinct spreading habit of growth. Many accounts have been given of trees that were known to be well over seventy-five years of age.

The fruits are bright amber yellow with a reddish blush, slightly mottled and of good size. The flesh is whitish, soft,

tender, juicy, sweet and quality very good. The juice is colorless. The fruit matures in mid-season between the time of Governor Wood and Napoleon. The softness of the flesh makes this variety quite susceptible to the attacks of Brown Rot fungus but its redeeming characteristics recommend it for home use.

VARIETIES OF DUKE CHERRIES

May Duke. This variety is known the world over and is believed to have originated in a district in France known as Medoc. It is widely grown in America and thrives under various soil and climatic conditions.

The trees are medium to large, upright and eventually develop into a uniform spreading type, and are moderately productive.

The fruit matures early in the season but ripens rather uniformly. The color is light red, changing to dark red at complete maturity. The flesh is reddish yellow, tender, melting and pleasantly subacid. The quality is very good and the variety is desirable for home orchards. It possesses the unfortunate characteristic of being an early bloomer and for that reason is occasionally injured by spring frost.

Royal Duke. This variety is very similar to May Duke except that it ripens somewhat later and the fruits are larger. It also has a somewhat peculiar bearing habit in that the fruits are considerably scattered along the branches and not infrequently develop singly at a node.

Late Duke. The origin of this variety is also unknown but it was known to be in cultivation in Europe as early as the latter half of the eighteenth century. Trees of this variety, are vigorous and have an upright spreading growth habit. They are, however, more open than those of May Duke.

The fruit matures very late and for this reason the variety is often a valuable addition to the home planting. It is of medium size, dark red, with amber-colored flesh and an abundance of rich, sprightly, subacid juice.

STERILITY PROBLEM WITH CHERRIES

Sour Cherries. All the standard commercial varieties of sour cherries are self fertile and under favorable conditions will set fruit satisfactorily when planted alone. In general however, the set is likely to be improved if ample provision is made so that cross pollination can take place. This is particularly true in seasons when weather conditions at blooming time are unfavorable for the work of bees.

Sweet Cherries. Almost without exception, sweet cherries are self sterile. With varieties commonly grown here at least two kinds and preferably three should be set so that cross pollination can take place. Sour cherries cannot be expected to serve as pollinizers for sweet varieties because of the difference in their blooming time under Kentucky conditions.

Duke Cherries. The three varieties mentioned are self-sterile and this condition is apparently due largely to their hybrid nature. Good pollen varieties have not been determined and for this reason it would be safer to plant them with two or more sweet varieties.

THE PLUM

The plum is not grown commercially to any extent in Kentucky, yet fairly large numbers of trees are grown in home plantings. Probably no fruit offers such a wide selection of colors, flavors, and aromas as the plum and for this reason, and with such a large list of varieties from which to choose, plum trees frequently make a much desired and valuable addition to the home orchard or for supplying local demands.

Over two thousand varieties of plums have been named and described, from fifteen different species. For general purposes, however, for our conditions, the list may be limited to just a few varieties which belong principally to four outstanding species; The European, American, Damson and Japanese, or to certain groups of varieties belonging to these different species.

EUROPEAN OR DOMESTICA PLUM (*Prunus domestica*)**Reine Claude Group**

There are several varieties that belong to this outstanding group of plums, the best known of which are Reine Claude and Bavay.

Reine Claude is not infrequently spoken of as the acme of quality among plum varieties. It is commonly called Green Gage. Its exact origin is unknown but the variety is very old and is known to have been under cultivation for at least three centuries. The name, Green Gage, was derived from the fact that the variety was introduced into England by the Gage family. The trees are of medium size and moderately productive and come into bearing while relatively young. They are somewhat more susceptible to winter injury than other kinds and are fairly short lived.

The fruit is yellowish green, of medium size and roundish oval in shape. The flesh is greenish yellow, very juicy, fairly firm, sweet, and extremely high in quality. It ripens in August. This variety is especially recommended for the home planting because of the outstanding quality of the fruit.

Lombard Group

Several outstanding varieties belong to this group of domestica plums; two which have proved satisfactory in the Experiment Station orchards are Lombard and Bradshaw.

Lombard. This plum is grown in many parts of the country and has a wide adaptation. The variety was grown from seed received from Amsterdam by Judge Platt of Whitesboro, New York. The name, Lombard, was given to this variety about 1830 by the Massachusetts Horticultural Society in honor of Daniel Lombard who first propagated the variety in that state. Trees attain medium size, are very productive and exceptionally hardy.

The fruit ripens in mid-season and has a relatively long ripening period. The color is light to dark purplish red and there is a covering of thick, gray bloom. The flesh is yellowish, firm, juicy and moderately sweet and the stone is semi-free. As

a fresh dessert fruit the quality of Lombard is inferior but when prepared in various culinary ways serves very well. Its hardiness, regularity of bearing and heavy yields recommend it for the home orchard.

Bradshaw. The origin of this variety is uncertain. It was named and described by C. M. Hovey in his magazine of Horticulture in 1846, with the following explanation. "For the want of a name to distinguish a very large and excellent plum, exhibited for three or four years in succession by E. E. Bradshaw, Esq., Charlestown, we have called it the Bradshaw plum." In reality it was the Large Black Imperial plum of Europe so the name, Bradshaw, is incorrect according to the rule of priority. Since the variety is now one of the leaders of Eastern United States it would cause too much confusion to change the name.

The fruits ripen in mid season and are light purplish-red, changing to dark reddish-purple at complete maturity. They are medium to large with a thin skin, moderately tough and heavily covered with bloom. The flesh is dull yellow, juicy, somewhat fibrous, moderately tender, sweet, pleasant, and good in quality. The stone is semi-free. The fruits are quite susceptible to brown rot.

PRUNE PLUMS

The prunes are another group of domestica plums and are characterized particularly by their relatively high sugar content and by the fact that they may be dried satisfactorily without removing the stone.

Several different varieties have been tested in the Experiment Station orchard and of these the Italian Prune was outstanding. The native home of this plum is Italy, but it is widely grown in all continental Europe as well as in America and is the leading variety in the Pacific Northwest.

The trees develop especially well and reach good size. They are hardy and vigorous and usually bear regularly and abundantly. The fruit matures rather late and ripens within a short period. They are large purplish black and have a rich, pleasant

flavor. The flesh is yellow, very juicy, aromatic and firm and the stone is free. To be desirable as a fresh fruit they should be allowed to develop to full maturity. When cooked they form a dark, wine-colored product that has a rich, sprightly flavor and the deep color makes them unusually attractive.

THE DAMSON PLUM (*Prunus insititia*)

The Damson plum ranks second only to domestica varieties in popularity in this part of the country. They thrive over an exceptionally wide range of soil and climatic conditions and under somewhat adverse conditions or even under a lack of proper care are likely to respond better than most of the domestica varieties.

Shropshire. This is the best known variety of the Damson group and is commonly grown in home plantings for use in the preparation of preserves. It originated in England some time in the seventeenth century. The trees are exceptionally vigorous and hardy and bear regular and abundant crops.

The fruit averages small and matures in late season. The skin is thin and purplish black, overspread with thick bloom. The flesh is golden-yellow, firm, juicy, agreeably tart at full maturity and pleasant flavored. It ripens in mid-September and is one of the best known varieties used in the home for jam, jellies and preserves. It is an exceptionally good variety for the home orchard or for supplying local markets.

French Damson. This variety produces the largest fruit of any of the Damson sorts. The size of the fruit has led some authorities to believe that the variety may be a hybrid with some Domestica plum. In addition to its excellent size, it has been found under Western Kentucky conditions to possess exceptional hardiness and has produced abundantly where other kinds have failed. The exact origin of the variety is unknown altho it is thought to have come from France. It was introduced into America by S. D. Willard, a nurseryman of Geneva, New York. The trees are large, spreading, vigorous, hardy and productive.

The fruit averages about twice the size of Shropshire and

matures at about the same time. The color is dull black over-spread with thick bloom. The skin is thin, tough and separates readily from the flesh. The flesh is greenish, tender, juicy, sweet, sprightly and pleasant flavored. The stone is semi-free and the quality good.

THE JAPANESE PLUM, *PRUNUS SALICINA* (Triflora)

Tho many varieties of Japanese plum are grown in Eastern United States, still they possess some characteristics which make them somewhat unsuited, particularly to Kentucky conditions. Most of the varieties are very early blooming which frequently results in damage by frost. Thus, this season, the fruits of Early June and Burbank were both completely killed in the Experiment Station orchard while European and American varieties which bloom considerably later suffered no damage. In addition to their early blooming habit they are also tender in bud while dormant, the flesh is soft, the quality generally relatively poor, and the fruits susceptible to brown rot. To offset these disadvantages, the trees are vigorous, come into production early and, if uninjured by frost, or cold, bear heavily.

Abundance. This variety is one of the best known of the triflora plums and is widely disseminated. In years when frost damage to blossoms or developing fruits has not occurred it bears heavily and is generally considered to be one of the best of the Japanese sorts. The trees were imported from Japan by Luther Burbank, in 1884, and introduced under the name Abundance, in 1888. The trees are vigorous, fairly large and moderately hardy.

The fruit is of medium size, clingstone, and matures early. It tends to drop prematurely and handles rather poorly because of its soft texture. The skin is thin and pinkish-red which changes to darker red at maturity. The flesh is yellow, tender, very juicy, sweet except next to the pit, and pleasant flavored. The exceptionally early blooming habit and the susceptibility of the fruit to brown rot are the most serious defects.

Burbank. This variety is generally popular despite its

early blooming habit. It surpasses Abundance in the better size and color of the fruit but bears somewhat less prolifically. The variety was produced by Luther Burbank from a pit sent him in 1883 by a Japanese agent, and was named in 1887. The trees have a peculiar low, sprawling habit of growth with a flat top and are healthy, vigorous and generally productive. The blooming season is early and short.

The fruit matures about a week later than Abundance and is of medium size. The color is dark red mixed with yellow. The skin is thin, somewhat bitter and separates from the pulp. The flesh is deep yellow, tender, juicy, moderately firm, sweet and the quality fair to good. The stone is clinging.

Red June. This is the earliest-ripening plum of the three Japanese varieties mentioned. It ripens about a week ahead of Abundance. The variety was imported from Japan by H. H. Berger and Company of San Francisco, in 1887, under the name Shiro Smomo. It was introduced as Red June by the Stark Brothers Nursery of Louisiana, Missouri, in 1893. The trees are large, vigorous and upright-spreading and, like other Japanese varieties, bloom very early. They produce abundantly when not killed by frost and are generally hardy and healthy.

The fruit is clingstone, garnet-red and mottled. The flesh is light yellow, somewhat fibrous, and moderately sweet. The quality is fair.

THE NATIVE OR AMERICAN PLUM

The outstanding characteristics of the native plums are their hardiness and general freedom from insect and disease injuries. They are inferior in quality to most of the European and Japanese varieties.

Wild Goose and Late Goose. These two varieties which are similar in many respects and differ principally in their ripening time, belong to the species, *munsoniana*. The Goose plums are among the best-known varieties for Kentucky. They are exceptionally hardy and productive and bloom late. Fruits of these varieties have survived under temperature conditions which killed the fruits of commonly grown apple varieties.

The trees are large, vigorous and healthy and produce much of their fruit on the shoot growth of the past season. The fruit is medium size, clear red, of fair quality and is used principally for jam and jelly.

STERILITY PROBLEM IN PLUMS

Practically all the Japanese plums and many of the European varieties are self sterile, and the European varieties are generally incompatible with both Japanese and American sorts; hence there are comparatively few varieties which are hybrids between European and these two species. On the other hand, Japanese and American varieties are generally compatible and many hybrid varieties have resulted from crosses between these two species. The American varieties are almost wholly self sterile. With these facts in mind, plantings of plums should be arranged so that there is ample provision for cross pollination and for the European varieties, at least two should be grown because of the incompatible nature of varieties of this species with the Japanese and American kinds. The time of blooming must be considered, also, in the choice of plum varieties. There is great difference in the blooming time of different varieties and those intended to serve as cross-pollinizers must, of course, bloom at the same time.

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